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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,582	04/24/2001	Kazuo Nishiyama	09792909-4979	5398
33448	7590	10/17/2005	EXAMINER	
ROBERT J. DEPKE LEWIS T. STEADMAN Trexler, Bushnell, Glanlorgi, Blackstone & Marr 105 West Adams Street, Suite 3600 Chicago, IL 60603-6299			ZARNEKE, DAVID A	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/841,582

Applicant(s)

NISHIYAMA ET AL.

Examiner

David A. Zarneke

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 8/5/05, with respect to the rejection(s) of the claim(s) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brunet et al., US Patent 6,420,211.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Brunet et al., US Patent 6,420,211.

Brunet (figures 4-7) teaches an electronic component comprising at least one semiconductor chip [100] having at least its electrodes formed exclusively on one surface thereof (5, 9-10), and surfaces other than said one surface for each individual semiconductor chip are continuously covered with a protective material [150], and further wherein the protective material adjacent to side surfaces of the semiconductor

Art Unit: 2891

chip is cut (6, 4+) to provide substantially vertical side walls of protective material formed adjacent to the sides of the semiconductor chip, there being substantially none of the protective material formed on the one surface.

Regarding claim 2, Brunet teaches the protective insulating material comprises an organic insulating resin or an inorganic material (5, 14+).

With respect to claim 3, Paik teaches a semiconductor chip diced from a wafer at a position of said protective material for mounting on a package substrate, wherein said electrode is formed on said one surface, which is a device surface, of said semiconductor chip, and both a side wall and a bottom surface of said semiconductor chip are covered with said protective material (figures 4-7).

Claims 6-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Brunet et al., US Patent 6,420,211.

Brunet (figures 4-7) teaches a pseudo wafer comprising a plurality of semiconductor chips [100] each having at least their electrodes formed solely on one surface thereof (5, 9-10), wherein interspaces between said chips and bottom surfaces thereof are continuously covered with said protective material [150], and the chips are bonded with each other and further wherein the protective material adjacent the side surfaces of each semiconductor chip is cut (6, 4+) to provide substantially vertical side walls of protective material formed adjacent the sides of the semiconductor chips.

In re claim 7, Brunet teaches the protective material comprises an organic insulating resin and an inorganic insulating material (5, 14+).

Regarding claim 8, Paik teaches the plurality of semiconductor chips arrayed thereon are diced at a position of said protective material between said plurality of semiconductor chips and thereafter mounted on a packaging substrate such that the protective material adjacent the side surfaces of the semiconductor chip is cut to provide substantially vertical side walls of protective material formed adjacent the sides of the semiconductor chip (figure 4-7).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

Art Unit: 2891

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunet et al., US Patent 6,420,211, as applied to claim 1 above.

As to claim 4, while Brunet fails to teach a solder bump formed on said electrode, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a solder bump on the electrode because this is a conventional, well known in the art next step in the making of a package. The use of conventional materials to perform there known functions in a conventional process is obvious (MPEP 2144.07).

In re claim 5, while Brunet fails to explicitly teach the use of a plurality of different types of semiconductor chips integrated and bonded by said protective material, it is a mere matter of design choice to use different types of chips as opposed to a single type of chip. Design choices and changes of size are generally recognized as being within the level of ordinary skill in the art (MPEP 2144.04(I), (IVA) & (IVB)).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brunet et al., US Patent 6,420,211, as applied to claim 6 above.

While Brunet fails to teach a solder bump formed on said electrode, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a solder bump on the electrode because this is a conventional, well known in the art next

step in the making of a package. The use of conventional materials to perform there known functions in a conventional process is obvious (MPEP 2144.07).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Baumeister can be reached on (571)-272-1722. The fax phone

Art Unit: 2891

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David A. Zarneke  
Primary Examiner  
October 8, 2005